1. (Unchanged) An echo cancellation method for a digital data communication system comprising a first device having a first transmitter and a first receiver, and a second device having a second transmitter and a second receiver, wherein said first transmitter is configured to transmit signals to said second receiver over a downstream communication channel, said first receiver is configured to receive signals from said second transmitter over an upstream communication channel, and an echo channel conveys echo signals between said first transmitter and said first receiver, said method comprising the steps of:

generating an analog output signal by said first transmitter for receipt by said second receiver;

sampling said analog output signal; and

performing echo cancellation based on said analog output signal, wherein said echo cancellation cancels the echo signals conveyed by said echo channel.

2. (Unchanged) A method according to claim 1, wherein said step of performing echo cancellation substantially reduces the effect, on signals received by said first receiver, of non-linearities present in said first transmitter.

3. (Unchanged) A method according to claim 2, wherein said step of performing echo cancellation further comprises the steps of:

converting said analog output signal into a corresponding digital signal, said digital signal corresponding to at least a part of the echo signals as well as the non-linearities present in said first transmitter; and

subtracting the digital signal from signals received by said first device to produce a compensated digital signal.

4. (Unchanged) A method according to claim 3, wherein said step of performing echo cancellation further comprises the step of training an echo canceler to account for at least a part of the echo signals imparted by said echo channel on signals received by said first device.

5. (Unchanged) A method according to claim 4, wherein said step of performing echo cancellation further comprises the step of updating said echo canceler with an update signal to increase the accuracy of an echo estimate generated by said echo canceler.

6. (Unchanged) A method according to claim 1, further comprising the steps of:

sampling a digital signal provided by a digital signal processor, said digital signal being operatively coupled to an input of said first transmitter; and

performing a second echo cancellation based on said digital signal, wherein said second echo cancellation further cancels the echo signals conveyed by said echo channel.

7. (Unchanged) A method for compensating for non-linearities introduced into a digital communication system, said method comprising the steps of:

sampling an analog output signal provided by a local transmitter, said analog output signal including characteristics associated with a nonlinearity introduced by said local transmitter;

converting said analog output signal into a corresponding digital signal; and

producing a compensated digital signal for receipt by a local receiver, wherein said nonlinearity is substantially eliminated from the compensated digital signal.

8. (Unchanged) A method according to claim 7, wherein said step of producing a compensated digital signal further comprises the step of reducing echo signals provided by an echo channel present in said digital communication system.

9. (Unchanged) A method according to claim 8, further comprising the step of training an echo canceler to account for the echo signals present in said digital communication system.

10. (Unchanged) A method according to claim 9, further comprising the step of updating said echo canceler with an update signal to increase the accuracy of an echo estimate generated by said echo canceler.

11. (Amended) A communication device for compensating for non-linearities and echo signals present in a digital communication system, said device comprising:

a transmitter for providing an analog output signal;

a receiver for receiving a compensated digital signal; and

an echo canceler having an input signal and an output signal, wherein said input signal is essentially the analog output signal, and said output signal is representative of the echo signal and the non-linearities present in said digital communication system; and

means for producing said compensated digital signal in response to the output signal of said echo canceler and a signal sent by a second communication device associated with said digital communication system.

12. (Unchanged) A communication device according to claim 11, wherein said device further comprises a first analog-to-digital converter for converting the analog signal of said transmitter into a digital signal associated with the input signal of said echo canceler.

13. (Unchanged) A communication device according to claim 12, wherein said device further comprises:

a second analog-to-digital converter for converting an impaired analog signal transmitted by the second communication device into a digital signal, wherein said digital signal of said second analog-to-digital converter contains the echo signals and non-linearities present in said digital communication system and comprises the digital signal sent by the second communication device.

14. (Unchanged) A communication device according to claim 13 wherein said echo canceler is trained to account for the echo signals present in said digital communication system.

15. (Unchanged) A communication device according to claim 14, wherein said echo canceler is updated to increase the accuracy of an echo estimate generated by said echo canceler.

16. (Unchanged) A communication device according to claim 11, said device further comprising:

a second echo canceler having an input signal and an output signal, wherein said input signal of said second echo canceler is operatively coupled to an input of said transmitter, said output signal of said second canceler is representative of said echo signals, and wherein said second echo canceler further cancels the echo signals present in said digital communication system.

Please add new claims 17-19 to read as follows:

17. (New) An echo cancellation method for a digital data communication system comprising a first device having a first transmitter and a first receiver, and a second device having a second transmitter and a second receiver, said first transmitter being configured to transmit signals to said second receiver over a downstream communication channel, and said first receiver being configured to receive signals from said second transmitter over an upstream communication channel, said method comprising the steps of:

generating an analog output signal by said first transmitter for receipt by said second receiver;

sampling said analog output signal;

detecting a signal on an echo channel associated with an actual echo signal at said second device; and

performing echo cancellation based on said sampled analog output signal and said signal on said echo channel.

18. (New) A method for compensating for non-linearities introduced into a digital communication system, said method comprising the steps of:

sampling an analog output provided by a local transmitter, said analog output including a known training signal and characteristics associated with a nonlinearity introduced by said local transmitter;

calculating an estimated echo signal in response to said known training signal;

detecting a signal on an echo channel associated with an actual echo signal at a second device; and

producing a compensated digital signal for receipt by a local receiver, wherein said nonlinearity is substantially eliminated from the compensated digital signal on the basis of the estimated echo signal and said signal associated with said actual echo signal at said second device.

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19. (New) A first communication device for compensating for non-linearities and echo signals present in a digital communication system, said first device comprising:

a transmitter for providing an analog output signal;

a receiver for receiving a compensated digital signal;

an echo canceler having an input signal and an output signal, wherein said input signal is essentially the analog output signal, and said output signal is representative of the echo signal and the non-linearities present in said digital communication system;

an input associated, at least in part, with an actual echo signal at a second communication device; and

a summing junction operably coupled with the output signal of the echo canceller and further operably coupled with the input associated, at least in part, with said actual echo signal at said second communication device.